AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 4 amended herewith to add the legend "Prior Art."

REMARKS

I. Status of the claims

Claim 1 is pending allowance in the application.

No amendment has been made.

II. Status of the drawings

The Examiner has objected to Figure 4. The drawing has been amended. Figure 4 is has been designated as "Prior Art." Corrected drawing sheets labeled "Replacement Sheets" are presently submitted in accordance with 37 CFR §1.84(c).

III. Rejections under 35 U.S.C. § 103(a)

Claim 1 is rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,876,193 to Hosono et al. ("Hosono") and the Examiner's statement of ordinary skill in the art. The Examiner states that Hosono teaches "that it is conventional in the art to utilize the area cross-sectional of one external tooth (Si) being formed outside a root circle is smaller/greater than the area cross-section of one internal tooth (So) being formed inside a root circle." Office Action dated July 20, 2004, p. 4, ll. 1-4. The Examiner acknowledges that the "prior art fails to disclose a range ratio Si/So is between 0.8 to 1.3." Office Action dated July 20, 2004, p. 3, l. 22. Further, the Examiner contends that this range would have been obvious since the use of this range would have reduced resistance and improved efficiency of the oil pump device. Office Action dated July 20, 2004, p. 4, ll. 5-9. Applicants respectfully traverse the rejection.

Applicants submit that Hosono teaches away from Applicants' claimed use of a range ratio Si/So of 0.8 to 1.3. Applicants claimed ratio represents an increase in the size of the outer tooth surface area relative to inner tooth surface area.

Hosono does not teach specific surface area ratios for the outer and inner teeth, or even suggest modifications in the size of the rotor teeth. Hosono only teaches that changes in the relative sizes of the teeth is incidental to rotor circle size; that is, that "the area of edge surface So of inner tooth becomes larger with respect to the area of edge surface Si of outer tooth as the value of Hi/Ei [ratio of the inner and outer rotor circles] is made larger [and causing] frictional torque to increase as a result." Hosono, col. 4, ll. 32-35. Consequently, one of ordinary skill in the art would not be taught or motivated to modify the size of the rotor teeth independent from changing the size of the rotor circles based on the teaching of the Hosono patent.

Further, Hosono only states that "when the edge surface So of the inner tooth is small with respect to the area of the edge surface Si of the outer tooth that.... [results] in causing the frictional torque T to decrease." Hosono, col. 4, ll. 45-49. However, Hosono additionally teaches that smaller inner teeth results in reduced "durability of the inner teeth [because] the oil pump rotor deteriorates." Hosono, col. 4, ll. 53-53. Thus, Hosono teaches that it is preferable to keep the edge surface area of the inner teeth smaller than the outer teeth and that provides a reduction in torque. Notwithstanding the fact that smaller inner teeth deteriorate, one of ordinary skill in the art is motivated to keep the edge surface area of the inner teeth as small as possible in relation to the outer teeth to receive the benefit of the reduced torque. Applicants submit that one of ordinary skill is not taught or motivated to experiment with ratio values as high as 0.8 to 1.3.

Consequently, one of ordinary skill in the art at the time the invention was made, though referring to the cited documents, would not have been taught or motivated to experiment in the range disclosed and claimed as the preferable Si/So ratio as claimed by the Applicants.

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CONCLUSION

In view of the above, the presently pending claim in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Dated: October 20, 2004   Respectfully submitted,

By _____
Louis J. DelJudice
   Registration No.: 47,522
DARBY & DARBY P.C.
P.O. Box 5257
New York, New York 10150-5257
(212) 527-7700
(212) 753-6237 (Fax)
Agent For Applicants